ACRONYMS

AB	Authorization Basis
AIChE	American Institute of Chemical Engineers
AIHA	American Industrial Hygiene Association
ALARA	As Low As Reasonably Achievable
CAMS	Corrective Action Management System
CAR	Construction Authorization Request
CFR	Code of Federal Regulations
Ci	Curie
CM	Configuration management
DAR	Deactivation Authorization Request
DBE	Design Basis Earthquake OR Design Basis Event
DOE	U.S. Department of Energy
DOELAP	DOE Laboratory Accreditation Program
DOE-RL	U.S. Department of Energy Richland Operations Office
DOH	Washington State Department of Health
DWPF	Defense Waste Processing Facility
EAL	Emergency Action Level
EARP	Enhanced Actinide Removal Plant
Ecology	Washington State Department of Ecology
ECP	Employee Concerns Program
EDSP	Engineering Design Safety Principle
EIS	Environmental Impact Statement
EMP	Emergency Management Program
EMS	Emergency Management System
EP	Emergency Plan
EPA	U.S. Environmental Protection Agency
EPIP	Emergency Plan Implementing Procedure
ER	Environmental Report
ERPG	Emergency Response Planning Guide
ERPP	Environmental Radiation Protection Program
ES&H	Environment, Safety, and Health
FHA	Fire Hazard Analysis
FR	Federal Register
FSAR	Final Safety Analysis Report
HAL	Highly Active Liquids
HAR	Hazard Analysis Report
HAZOP	Hazard and Operability (analysis)
HEPA	High-Efficiency Particulate Air (filter)
HLW	High-Level Waste
HRC	Hazards Research Corporation
Hwy	Highway
ICBO	International Conference of Building Officials
IPT	Integrated Product/Process Team
IRT	Independent Review Team
ISA	Integrated Safety Analysis
ISAR	Initial Safety Analysis Report
ISMP	Integrated Safety Management Plan
ISO	International Organization of Standards

LAW	Low-Activity Waste

LPS	Licensing, Permitting, and Safety
LWA	Limited Work Authorizations
MSDS	Material Safety Data Sheets
NAICS	North American Industry Classification System
NCRP	National Council on Radiation Protection and Measurements
NPH	Natural Phenomenon Hazard
NRC	U.S. Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
OAR	Operating Authorization Request
OPM	Operational Preventive Measures
OSHA	Occupational Safety and Health Administration
PFD	Process Flow Diagram
PHA	Process Hazards Analysis
PHMC	Project Hanford Management Contractor
PSAR	Preliminary Safety Analysis Report
PSC	Project Safety Committee
PSM	Process Safety Management
QA	Quality Assurance
QAP	Quality Assurance program
QAPIP	Quality Assurance Program Implementing Plan
QAPP	Quality Assurance program plan
QARD	Quality Assurance Requirements and Description
QL	Quality Level
QR	Quality Requirements
RAMI	Reliability, Availability, Maintainability, and Inspectability
RCRA	*Resource Conservation and Recovery Act of 1976*
rem	Roentgen-Equivalent Man
RG	Regulatory Guide
RL	Department of Energy Richland Operations Office
RMP	Risk Management Plan
RPP	Radiation Protection Program
RPP-WTP	River Protection Program – Waste Treatment Plant
RU	Regulatory Unit
SA	Safety Assessment
SAR	Safety Analysis Report
SDC	Safety Design Class
SDS	Safety Design Significant
SER	Safety Evaluation Report
SIXEP	Site Ion Exchange Effluent Plant
SNM	Special Nuclear Material
SPD	System Performance Demonstrations
SRD	Safety Requirements Document
SSC	Structures, Systems, and Components
STD	Standard (also Std)
TSR	Technical Safety Requirement
TEDE	Total Effective Dose Equivalent
THORP	Thermal Oxide Reprocessing Plant
TWRS	Tank Waste Remediation System
TWRS-P	Tank Waste Remediation System-Privatization
UBC	Uniform Building Code

UK	United Kingdom

USC	United States Code
USQ	Unreviewed Safety Question
VPP	Voluntary Protection Program
VSL	Vitreous State Laboratory
WAC	*Washington Administrative Code*
WISHA	Washington Industrial Safety and Health Administration
WVP	Waste Vitrification Plant

As allowed by 10 CFR 835.101(I) BNFL Inc. may make changes to the approved RPP so long as the change does not decrease the effectiveness of the RPP and the RPP, as changed, continues to meet the requirements of 10 CFR 835. Proposed changes that decrease the effectiveness of the RPP are not implemented without submittal to and approval by DOE. Updates to the RPP are required if a change or addition is made to the RPP. Updates of the RPP are considered approved 180 days after submittal unless rejected by the regulator.

In accordance with *Regulatory Unit Position on Contractor Initiated Changes to the Authorization Basis*, RL-/REG-97-13 (DOE-RL 2000), BNFL Inc. may make changes to the facility or administrative controls if a review of the Authorization Basis is performed and either:

a) The review demonstrates that a proposed change is consistent with the existing Authorization Basis or

b) The Authorization Basis is revised prior to the implementation of the proposed change.

3.3.3.1 Authorization Basis Revisions. BNFL Inc. may make revisions to the authorization basis, other than to the QAP and RPP as discussed above, ~~may be made~~ without prior approval of the Regulatory Unit provided ~~a~~that the following safety evaluation and documentation requirements are met: ~~safety~~

a. An evaluation is performed that demonstrates that the revision:

1) Does not involve deletion or modification of a standard previously identified or established in the approved SRD

2) Does not involve a modification of an approved Technical Safety Requirement

3) Does not result in a reduction of a commitment described in the Authorization Basis

4) Does not result in a reduction in the effectiveness of any program, procedure, or plan described in the Authorization Basis

5) Does not result in an Unreviewed Safety Question (USQ), if a Production Operations Authorization has been issued.

b. A written evaluation is performed that demonstrates that the revisions to the authorization basis:[1]

~~With regard to the documentation of the safety evaluations:~~

[1] The format, content, and level of detail associated with an acceptable "safety evaluation" is highly dependent on the nature of the proposed revision to the authorization basis. Rather than establishing comprehensive guidance on appropriate evaluation format, content, and level of detail, the position identifies the most fundamental basis that can be applied to evaluating proposed revisions. There is a wide range of acceptable safety evaluation approaches. Also, the appropriate degree of rigor and documentation associated with the safety evaluation should be tailored to the specific authorization basis revision. The position does not indicate that an explicit and detailed case be made and documented showing that the fundamental criteria have been satisfied for all revisions to the authorization basis.

1) Will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety.

2) Will continue to conform to the original submittal requirements associated with the authorization basis document(s) affected by the revision.

3) Will not result in inconsistencies with other commitments and descriptions contained in authorization basis or an authorization agreement.

c. The following documentation requirements are met:

1) All changes, authorization basis revisions, and associated evaluations ~~are~~ performed in accordance with paragraphs a and b above will be documented~~, retained as quality assurance records, and made available for review by the Regulatory Unit~~.

2) Documentation will be retained and readily available for RU review.

3 ~~Safety e~~Evaluations ~~are~~ should be documented in sufficient detail such that a knowledgeable individual reviewing the evaluation can identify the technical issues considered during the evaluation and the basis for the determinations.

~~3~~4) The Regulatory Unit ~~is~~ will be notified of revisions to the authorization basis within 30 days of completing such revision.

3.3.3.2 Authorization Basis Amendments. ~~Changes impacting the authorization basis that require approval of the Regulatory Unit~~An authorization basis revision that meets the conditions of subsection 3.3.3.1 paragraph a but does not meet the conditions of subsection 3.3.3.1 paragraph b may be implemented following approval by the Regulatory Official of a request to amend the authorization basis. A request to amend the authorization basis includes:

1) A description of the proposed revision

2) The reason for the proposed revision

3) A description~~s~~ of the proposed implementation schedule for the revision and associated change(s)

4) A copy of the authorization basis document or appropriate excerpt showing the proposed revision(s)

5) The safety evaluation for the proposed revision, as described in subsection 3.3.3.1 paragraphs a and b

6) If the revision involves the deletion or modification of a standard previously identified in the approved SRD,

~~a) An evaluation that demonstrates the revised SRD will continue to identify a set of standards that will provide adequate safety, comply with all applicable laws and regulations, and conform to the top-level standards, and,~~

~~b) C~~c~~ertification that the revised SRD will continue to identify a set of standards that will provide adequate safety, comply with all applicable laws and regulations, and conform to the top-level safety standards.

3.3.3.3 Decisions to Deviate from the Authorization Basis. During the design and construction phase prior to the Start of Cold-Testing, BNFL Inc. may implement design changes that deviate from the Authorization Basis, provided that the provisions of paragraphs 1, 2, and 3 below are met.

1. Evaluation

Prior to implementing a change that deviates from the Authorization Basis, BNFL Inc. will perform an evaluation that determines that:

a. the change complies with applicable laws and regulations, conforms with top-level safety standards, and satisfies the SRD Safety Criteria, and

b. the specific changes will not cause or threaten imminent danger to the workers, the public, or the environment from radiological, nuclear, or chemical hazards.

2. Documentation of Decision to Deviate from the Authorization Basis

Documentation of BNFL Inc.'s decision to deviate from the Authorization Basis will be completed prior to implementing the change and will include the following:

a. Identification of the specific changes to be implemented

b. Identification of the specific deviation(s) from the Authorization Basis

c. The evaluation described in paragraph 1

d. The signature of the manager(s) having the authority to approve changes that deviate from the Authorization Basis and the date such changes were approved.

Such documentation will be readily retrievable and made available to the RU upon request.

3. Time Limits and Notification

a. During the construction phase, if prior approval by the Regulatory Official is required, BNFL Inc. will notify the Regulatory Official (or his/her designee):

1) either verbally or in writing within 24 hours of the decision to deviate from the Authorization Basis (as recorded in 2.d above), and

2) in writing within 72 hours of the decision to deviate from the Authorization Basis (as recorded in paragraph 2.d above). This notification will include a copy of the documentation of the decision to deviate from the Authorization Basis described in paragraph 2 above.

b. If prior approval by the Regulatory Official is not required, BNFL Inc. will revise the Authorization Basis within 30 days following the decision to deviate from the Authorization Basis (as recorded in 2.d above) and notify the RU within 30 days of completing such revision.

c. If prior approval by the Regulatory Official is required, BNFL Inc. will submit a request to amend the Authorization Basis to the Regulatory Unit within 30 days following the decision to deviate from the Authorization Basis (as recorded in 2.d above).

d. If provisions 3.b or 3.c are not met, or if approval of the amendment request is not obtained within 90 days of the decision to deviate from the Authorization Basis (as recorded in paragraph 2.d above):

1) All physical work associated with implementing the change that deviates from the Authorization Basis will stop, and

2) Corrective action will be initiated immediately, in accordance with paragraph 4 below.

4. Tracking and Resolution of Deviations from the Authorization Basis

Changes that deviate from the Authorization Basis will be entered into the project's Corrective Action Management System (CAMS) as a condition adverse to quality, as described in the QAPIP. If the provisions of paragraph 3.d are invoked, the change will be recorded as a significant condition adverse to quality, and corrective action will be tracked to completion. CAMS records related to deviations from the AB will be uniquely identified to facilitate retrieval and generation of reports of the current status of such deviations upon request by the RU.

All revisions to the Authorization Basis associated with approved Authorization Basis deviations will be completed and all deficiencies documented under paragraph 2 will be resolved prior to Start of Cold-Testing.

3.4 SAFETY/QUALITY CULTURE

Through the successful design, construction, and operation of facilities (sites) around the world, the BNFL team understands the importance of a strong safety and quality culture in achieving excellence. To achieve a culture in which individuals involved in safety-related activities accept responsibility for the safety and quality through all phases of the TWRS-P Project, the BNFL team establishes the following policy:

1) Outlining expectations and performance standards

2) Communicating those expectations

3) Implementing procedures that facilitate achieving expectations

4) Performing assessments to measure the compliance with and the appropriateness of BNFL's safety goals.

To achieve safety and quality throughout design, construction, and operation of the facility, the BNFL team establishes measurable goals in the areas of industrial health and safety of workers, radiological and chemical exposure limits for the public and workers, and environmental release limits. The team then establishes policies that require the communication of the goals to employees and contractors. Communication techniques include posters, meetings, newsletters, recognition of outstanding performance, and incorporation of the goals into performance plans for groups and individuals. Another important aspect of communication is training. Employees are provided information regarding the inherent hazards of the work and tools effective in controlling the hazards or responding to hazardous situations encountered during the work processes. Managers and supervisors are expected to be familiar with the work processes and to understand the potential hazards and hazardous situations.

Other policies that establish standards of conduct and job site work rules are communicated to employees. The policies empower TWRS-P Facility employees to stop the activity in which they are involved if the work procedure or process is not clear or the activity appears unsafe. The policies also direct that performance reviews emphasize the requirements for safety and quality.

12.0 DEFINITIONS

In the following list, the parenthetical information following the term being defined is the source of the definition. However, for sources other than DOE/RL-96-0006 (DOE 1996b) or the BNFL Inc./DOE contract (DOE-RL 1996c), the wording provided may be tailored to the TWRS-P Project use and therefore may not be exactly as contained in the referenced source.

Accident Risk Goal (DOE/RL-96-0006 [DOE-RL 1996b]). The risk, to an average individual in the vicinity of the Contractor's facility, of prompt fatalities that might result from an accident should not exceed one-tenth of one percent (0.1%) of the sum of prompt fatality risks resulting from other accidents to which members of the U.S. population generally are exposed.

By footnote 14 of DOE/RL-96-0006, for evaluation purposes, individuals are assumed to be located within 1 mile of the contractor's controlled area.

Acute Hazard (AIChE 1992). The potential for injury or damage to occur as a result of an instantaneous or short duration exposure to the effects of an accident.

Administrative Controls. Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure safe operation of the facility.

As Low as Reasonably Achievable (10 CFR 835). The approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the general public to as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations. The ALARA approach is not a dose limit but a process that has the objective of attaining doses as far below the applicable limits of this part (10 CFR 835) as is reasonably achievable.

Authorization Basis (DOE/RL-96-0006 [DOE-RL 1996b]). The composite of information provided by a Contractor in response to radiological, nuclear, and process safety requirements that is the basis on which the Director of the Regulatory Unit grants permission to perform regulated activities.

Changes (RL/REG-97-13). Changes to the facility ~~design~~ and administrative controls ~~(e.g., procedures, programs, plans, or management processes)~~ that are described in the authorization basis or are relied upon by the Contractor to ensure conformance to the authorization basis.[1]

As used above, "facility" refers to the physical facility, the hazards and safety analysis of the facility, and the work at the facility that is enveloped by the analyses. The facility is described in the authorization basis by information such as: the site description, design information, hazard analysis information, safety analysis information, and descriptions of facility operations, tests, and experiments.

[1] Included within the scope of "Changes" are those items that may not be explicitly described in the authorization basis, but where Changes would cause a deviation from commitments contained in the authorization basis.

As used above, “administrative controls” refers broadly to the management and administrative processes associated with managing, designing, building, or operating the facility. Administrative controls are described in the authorization basis by information such as the descriptions of procedures, programs, plans, and management processes.

Codes and Standards. Document containing expressed expectations for the performance of work; normally refers to those practices issued by consensus organizations (e.g., American National Standards Institute, American Society of Mechanical Engineers, and National Fire Protection).

Co-located Worker (DOE/RL-96-0006 [DOE-RL 1996b]). An individual within the Hanford Site, beyond the Contractor-controlled area, performing work for or in conjunction with DOE or utilizing other Hanford Site facilities.

Common-Cause Failures (DOE/RL-96-0006 [DOE-RL 1996b]). Dependent failures that are caused by a condition external to a system or set of components that make system or multiple component failures more probable than multiple independent failures.

Safety Design Class. Structures, systems, or components that, by performing their specified safety function, prevent workers or the maximally exposed member of the public from receiving a radiological exposure that exceeds the accident exposure standards defined in the SRD. Safety Design Class also applies to those features that by functioning, prevent the worker or maximally exposed member of the public from receiving a chemical exposure that exceeds the ERPG-2 (AIHA 1988) chemical release standard. Those features credited for the prevention of a criticality event are also designated as Safety Design Class.

Safety Design Significant. Structures, systems, and components needed to achieve compliance with the radiological or chemical exposure standards for the public and workers during normal operation; and SSCs that can, if they fail or malfunction, place frequent demands on, or adversely affect the function of, Safety Design Class SSCs.

Safety Limits (DOE/RL-96-0006 [DOE-RL 1996b]). Limits on process variables associated with those physical barriers, generally passive, that are necessary for the intended facility safety functions and that are found to be required to prevent release of unacceptable levels of radioactive material to workers or the general public.

Specified Safety Function. That attribute of a Safety Design Class or Safety Design Significant engineered control credited for maintaining public or worker safety within exposure standards.

Safety Requirements Document (SRD)(DOE/RL-96-0006 [DOE-RL 1996b]). A document that contains the approved and mandated set of radiological, nuclear, and process safety standards and requirements which, if implemented, provides adequate protection of workers, the public, and the environment against the hazards associated with the operation of the Contractor's facilities.

Start of Cold-Testing. That point in the construction phase of each facility of the RPP-WTP during start-up testing but prior to admitting any significant quantities of radioactive waste or process chemicals into the facility. This milestone will be established in the Construction Agreement.

Tailoring (DOE G 450.4-1). Adapting something, such as a safety program, practice, or requirement to suit the need or purposes of a particular operation or activity, taking into account the type of work and associated hazards and hazardous situations.

Technical Safety Requirements (DOE/RL-96-0006 [DOE-RL 1996b]). Those requirements that define the conditions, the safe boundaries, and the management or administrative controls necessary to ensure the safe operation of the facility, reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials, and from radiation exposures due to inadvertent criticality.

Unreviewed Safety Question (USQ) (DOE/RL-96-0006 [DOE-RL 1996b]). A safety question where any of the following conditions are satisfied: 1) the probability of occurrence or the radiological consequences of an accident or malfunction of equipment important to safety, previously evaluated in the facility safety analyses or other related safety analysis and evaluations not yet included in the updated facility analysis, may be increased; 2) a possibility for an accident or equipment malfunction of a different type than any evaluated previously in the facility safety analyses or other related safety analysis and evaluations not yet included in the updated facility safety analysis may be created; or 3) any margin of safety is reduced. (Also see definition for "Margin of Safety.")

BNFL 1997e, *TWRS-P Privatization Project: Radiological and Nuclear Dose Standards for Facility and Co-Located Worker*, BNFL Inc., Richland, Washington.

BNFL 1998a, *TWRS-P Privatization Project: Deactivation Plan*, BNFL-5193-DP-01, Draft, BNFL Inc., Richland, Washington.

BNFL 1998b, *TWRS-P Privatization Project: Integrated Master Plan*, BNFL-5193-IMP-01, Revision 1, BNFL Inc., Richland, Washington.

BNFL 1998c, *Tank Waste Remediation System Privatization Project: Quality Assurance Program and Implementation Plan*, BNFL-5193-QAP-01, Revision 4, BNFL Inc., Richland, Washington.

DOE 1994, *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities*, DOE-HDBK-3010-94, U.S. Department of Energy, Washington, D.C.

DOE 1995a, *Comprehensive Emergency Management System*, DOE O 151.1, U.S. Department of Energy, Washington, D.C.

DOE 1995b, *Quality Assurance Requirements and Description for the Civilian Radioactive Waste Management Program (QARD)*, DOE/RW-0333P, Rev. 5, U.S. Department of Energy, Washington, D.C.

DOE-RL 1994, *Hanford Emergency Response Plan*, DOE/RL 94-02, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL 1996a, *DOE Regulatory Process for Radiological, Nuclear, and Process Safety for TWRS Privatization Contractors*, DOE/RL-96-0003, Revision 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL 1996b, *Top-level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors*, DOE/RL-96-0006, Revision 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL 1996c, *TWRS Privatization*, DOE Contract DE-AC06-RL-12208, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL 1997, *Guidance for the Review of TWRS Privatization Contractor Integrated Safety Management Plan Submittal Package*, Revision 0, RL/REG-97-07, U.S. Department of Energy, Richland, Washington.

DOE-RL 1998a, *Corrective Action/Enforcement Action Program Description*, Revision 0, RL/REG-98-06, U.S. Department of Energy, Richland, Washington.

DOE-RL 1998b, *Inspection Program Description for the Regulatory Oversight of TWRS Privatization Contractors*, Revision 0, RL/REG-98-05, U.S. Department of Energy, Richland, Washington.

DOE-RL 2000, *Regulatory Unit Position on Contractor-Initiated Changes to the Authorization Basis*, Revision 6, RL/REG-97-13, U.S. Department of Energy, Office of Safety Regulation of the TWRS-P Contractor, Richland, Washington.

EPA 1991, *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*, U.S. Environmental Protection Agency, Washington, D.C.